

1. (Twice Amended) A system for [modular amplification] amplifying [of] optical signals in a set of multiple channels in an operating window of a fiber communication network, comprising:

a plurality of subwindows within said operating window;

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a first multiplexing unit [for] configured to multiplex [multiplexing] the optical signals in the set of multiple channels into [at least one] a plurality of subgroups [subgroup] of optical signals, each subgroup associated with one of said plurality of subwindows within the operating window, such that each subwindow corresponds to and is associated with a different group of channels within the operating window; and

[at least one] a plurality of optical line [amplifier] amplifiers, each amplifier configured to amplify a [for amplifying said one] subgroup of optical signals associated with [said one] a different subwindow of said plurality of subwindows [subwindow] within the operating window.

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7. (Amended) The system of claim 1, wherein [said at least one optical line amplifier comprises a plurality of optical line amplifiers and] said first multiplexing unit comprises:

a first coarse wavelength division multiplexing unit [for multiplexing] configured to multiplex the optical signals in the set of multiple channels into first, second, third, and fourth subgroups of optical signals depending upon wavelength in corresponding first, second, third, and fourth subwindows within the operating window; and

first, second, third, and fourth fine wavelength division multiplexing units optically coupled in parallel between said first coarse wavelength division multiplexing unit and said plurality of optical line amplifiers, said first, second, third and fourth fine wavelength

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and

division multiplexing units further configured to multiplex said first, second, third, and fourth subgroups of optical signals by wavelength into channels for carrying optical signals having different wavelengths within corresponding first, second, third and fourth subwindows.

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8. (Amended) The system of claim 1, further comprising:

a second multiplexing unit [for] configured to multiplex [multiplexing] the optical signals in the set of multiple channels into said at least one subgroup of optical signals in [said] a respective [at least one] subwindow of said plurality of subwindows within the operating window; and

[at least one] a plurality of optical [fiber] fibers coupled between said first and second multiplexing units, each of said [at least one] plurality of optical line [amplifier] amplifiers [being] optically coupled to one of said [at least one] plurality of optical [fiber] fibers to amplify said [at least one subgroup] subgroups of optical signals corresponding to [said at least one] respective [subwindow] subwindows within the operating window.

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11. (Amended) The system of claim 8, wherein said first and second multiplexing units are arranged at first and second sites, [and said at least one] each of said plurality of optical line [amplifier] amplifiers and each of said [at least one] plurality of optical [fiber] fibers [each] configured to transport optical signals traveling in at least one of uni-directional traffic and bi-directional traffic between said first and second sites.

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12. (Amended) The system of claim 11, wherein said [at least one] plurality of optical line amplifier comprises first to fourth line amplifiers, said [at least one subgroup] plurality

of subgroups of optical signals comprises first to fourth subgroups of optical signals in corresponding first to fourth subwindows within the operating window, and further comprising:

a second multiplexing unit [for] configured to multiplex [multiplexing] the optical signals in the set of multiple channels into said first to fourth subgroups of optical signals in corresponding first to fourth subwindows within the operating window, each subwindow corresponding to a different group of channels within the operating window; and

first to fourth optical fibers arranged in parallel between said first and second multiplexing units, said first to fourth optical line amplifiers [being] optically coupled along said first to fourth optical fibers, respectively, and configured to amplify said first to fourth subgroups of optical signals corresponding to said first to fourth subwindows within the operating window;

wherein said first and second multiplexing units are arranged at first and second sites, and said first and third optical line amplifiers and said first and third optical fibers each configured to pass optical signals traveling in a first direction between said first and second sites, and said second and fourth optical fibers each configured to pass optical signals traveling in a second direction between said first and second sites opposite to said first direction.

13. (Amended) The system of claim 1, wherein each of said plurality of optical line [amplifier] amplifiers further [includes] includes a dispersion compensation device, [whereby,] and wherein subgroups of optical signals corresponding to respective subwindows

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within the operating window are amplified for each subwindow to make amplifier gain approximately equal across the channels in the operating window.

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14. (Twice Amended) A method of [modular] amplifying [amplification of] optical signals in a set of multiple channels in an operating window of a fiber communication network, comprising [the steps of]:

providing a plurality of subwindows within said operating window;

multiplexing the optical signals in the set of multiple channels into [at least one] a plurality of subgroups [subgroup] of optical signals, each subgroup associated with one of said plurality of subwindows within the operating window, such that each subwindow corresponds to and is associated with a different group of channels within the operating window; and

amplifying each of said [one subgroup] subgroups of optical signals associated with said [one subwindow] plurality of subwindows within the operating window using a different optical line amplifier for each subgroup.

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20. (Amended) The method of claim 14, wherein said multiplexing [step] further comprises [the steps of]:

[performing a first] coarse wavelength division multiplexing [operation to multiplex] the optical signals in the set of multiple channels into first, second, third, and fourth subgroups of optical signals depending upon wavelength in corresponding first, second, third, and fourth subwindows within the operating window; and

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[performing first, second, third, and fourth] fine wavelength division multiplexing [operations in parallel to further multiplex] said first, second, third, and fourth subgroups of optical signals by wavelength into channels for carrying optical signals having different wavelengths within corresponding first, second, third, and fourth subwindows.

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26. (Amended) The method of claim 14, further comprising [the step of] compensating dispersion magnitude separately for each subwindow, [whereby,] and wherein said subgroups of optical signals corresponding to said subwindows within the operating window are amplified for each subwindow to make amplifier gain approximately equal across the channels in the operating window.

27. (Twice Amended) A system for modular amplification of optical signals in a set of multiple channels in an erbium band operating window of a fiber communication network, comprising:

first and second wavelength division multiplexing units[; and], wherein said first and second wavelength division multiplexing units each comprise a coarse WDM unit and at least one fine WDM unit; wherein fine WDM units can be added to the system in a modular fashion to support channels in respective subwindows of said operating window as needed;

a fiber link, having at least one optical fiber, [optical] optically coupling said first and second wavelength division multiplexing units; and

[wherein said first and second wavelength division multiplexing units each comprises a coarse WDM unit and at least one fine WDM unit; whereby fine WDM units can

be added to the system in a modular fashion to support channels in respective subwindows as needed]

optical line amplifiers associated with each fine WDM unit and configured to amplify optical signals within a respective subwindow corresponding to each fine WDM unit.

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28. (Twice Amended) The system of claim 27, further comprising[, at least one optical line amplifier and] dispersion compensation [unit] units provided along said at least one optical fiber in said fiber link, [whereby,] and wherein [a plurality of] optical line [amplifier] amplifiers and dispersion compensation units can be added to the system in a modular fashion to support channels in respective subwindows as needed.

29. (Amended) A [modular] wavelength division multiplexing system for multiplexing optical signals in a set of multiple channels within an operating window of a fiber communication network, comprising:

a coarse wavelength division [multiplexing] multiplexing/demultiplexing unit; and

at least one fine wavelength division [multiplexing] multiplexing/demultiplexing unit;

wherein,

said coarse wavelength division [multiplexing] multiplexing/demultiplexing unit multiplexes the optical signals into subgroups of optical signals in corresponding subwindows within said operating window, each subwindow corresponding to a different ~~group of channels within said operating window; and~~

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each fine wavelength division [multiplexing] multiplexing/demultiplexing unit
multiplexes the optical signals within a respective subgroup of optical signals into individual
channels within a corresponding subwindow.

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34. (Amended) The system of claim 29, wherein:

said coarse [multiplexing] multiplexing/demultiplexing unit comprises a first coarse
wavelength division [multiplexing] multiplexing/demultiplexing unit [for multiplexing]
configured to multiplex said optical signals in said set of multiple channels into first, second,
third, and fourth subgroups of optical signals depending upon wavelength in corresponding
first, second, third, and fourth subwindows within the operating window; and

said at least one fine wavelength division [multiplexing] multiplexing/demultiplexing
unit comprises first, second, third, and fourth fine wavelength division [multiplexing]
multiplexing/demultiplexing units optically coupled to said first coarse wavelength division
[multiplexing] multiplexing/demultiplexing unit, said first, second, third, and fourth fine
wavelength division [multiplexing] multiplexing/demultiplexing units further multiplexing
said first, second, third, and fourth subgroups of optical signals by wavelength into channels
for carrying optical signals having different wavelengths within corresponding first, second,
third, and fourth subwindows.

35. (Amended) A [modular wavelength division multiplexing] method [for] of
multiplexing optical signals in a set of multiple channels within an operating window of a
fiber communication network, comprising [the steps of]: